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## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/873,737A

DATE: 10/23/2001

TIME: 10:49:29

Input Set : A:\180-104-2.ST25 revised 07-30-01.txt

Output Set: N:\CRF3\10232001\I873737A.raw

3 <110> APPLICANT: Duke University  
 4 Lin, Haifan  
 6 <120> TITLE OF INVENTION: PURIFIED AND ISOLATED piwi FAMILY GENES AND GENE  
 7 PRODUCTS AND THERAPEUTIC AND SCREENING METHODS USING SAME  
 9 <130> FILE REFERENCE: Attorney Docket No. 180-104/2  
 11 <140> CURRENT APPLICATION NUMBER: 09/873,737A  
 12 <141> CURRENT FILING DATE: 2001-06-04  
 14 <150> PRIOR APPLICATION NUMBER: PCT/US99/28764  
 15 <151> PRIOR FILING DATE: 1999-12-03  
 17 <150> PRIOR APPLICATION NUMBER: 60/110,901  
 18 <151> PRIOR FILING DATE: 1998-12-04  
 20 <160> NUMBER OF SEQ ID NOS: 21  
 22 <170> SOFTWARE: PatentIn Ver. 2.1  
 25 <210> SEQ ID NO: 1  
 26 <211> LENGTH: 3047  
 27 <212> TYPE: DNA  
 28 <213> ORGANISM: Drosophila sp.  
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 30 <221> NAME/KEY: CDS  
 31 <222> LOCATION: (84)..(2612)  
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 34 <221> NAME/KEY: misc\_feature  
 35 <222> LOCATION: (120)  
 36 <223> OTHER INFORMATION: n=a or c, Xaa=Leu or Ile  
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 40 <222> LOCATION: (399)  
 41 <223> OTHER INFORMATION: n=a or t, Xaa=Leu or Ile  
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 44 <221> NAME/KEY: misc\_feature  
 45 <222> LOCATION: (2436)  
 46 <223> OTHER INFORMATION: n=a or c, Xaa=Leu or Ile  
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 52 Met Ala Asp Asp Gln Gly Arg Gly Arg Arg  
 53 1 5 10  
 W--> 55 cgt cca ntt aac gaa gat gat tcc tct act tcc cga ggt agt ggt gat 161  
 W--> 56 Arg Pro Xaa Asn Glu Asp Asp Ser Ser Thr Ser Arg Gly Ser Gly Asp  
 57 15 20 25  
 59 ggg ccg cgg gtg aaa gta ttc aga gga tct tca tca ggt gac ccg aga 209  
 60 Gly Pro Arg Val Lys Val Phe Arg Gly Ser Ser Ser Gly Asp Pro Arg  
 61 30 35 40  
 63 gcg gat cct cgt ata gag gct tca aga gag aga aga gct ctc gag gaa 257  
 64 Ala Asp Pro Arg Ile Glu Ala Ser Arg Glu Arg Arg Ala Leu Glu Glu  
 65 45 50 55  
 67 gct ccc agg cgt gaa ggt ggc ccg cca gag cga aag ccg tgg ggt gac 305

ENTERED

p.5

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68 Ala Pro Arg Arg Glu Gly Gly Pro Pro Glu Arg Lys Pro Trp Gly Asp
69      60      65      70
71 caa tat gat tac ctg aat acc cgt ccg gtt gag ctg gta tcc aag aag 353
72 Gln Tyr Asp Tyr Leu Asn Thr Arg Pro Val Glu Leu Val Ser Lys Lys
73 75      80      85
W--> 75 gga acc gat ggc gtc ccg gtc atg ctg cag acg aac ttt ttt cga nta 401
W--> 76 Gly Thr Asp Gly Val Pro Val Met Leu Gln Thr Asn Phe Phe Arg Xaa
77      95      100      105
79 aaa acc aag ccg gaa tgg cgg atc gtt cat tat cac gtg gag ttt gtg 449
80 Lys Thr Lys Pro Glu Trp Arg Ile Val His Tyr His Val Glu Phe Val
81      110      115      120
83 ccg acc atc gag aat cct cgt gtc cgt atg gga gtt ttg tcc aat cat 497
84 Pro Thr Ile Glu Asn Pro Arg Val Arg Met Gly Val Leu Ser Asn His
85      125      130      135
87 gct aac ctt ctg gga tca ggc tat cta ttc gac gga ctg caa ctg ttc 545
88 Ala Asn Leu Leu Gly Ser Gly Tyr Leu Phe Asp Gly Leu Gln Leu Phe
89      140      145      150
91 acc acc agg aaa ttc gag cag gaa atc acg gtg ctc agc gga aag tcg 593
92 Thr Thr Arg Lys Phe Glu Gln Glu Ile Thr Val Leu Ser Gly Lys Ser
93 155      160      165      170
95 aag ctg gac att gaa tac aag ata tcc ata aag ttc gtt gga ttc ata 641
96 Lys Leu Asp Ile Glu Tyr Lys Ile Ser Ile Lys Phe Val Gly Phe Ile
97      175      180      185
99 tcg tgt gct gag ccc cgc ttt ttg caa gtc tta aat cta ata ttg cgc 689
100 Ser Cys Ala Glu Pro Arg Phe Leu Gln Val Leu Asn Leu Ile Leu Arg
101      190      195      200
103 cgc tcg atg aag ggc cta aat ttg gaa tta gtt ggc cgt aat ctc ttt 737
104 Arg Ser Met Lys Gly Leu Asn Leu Glu Leu Val Gly Arg Asn Leu Phe
105      205      210      215
107 gat ccc cga gct aag atc gaa ata agg gag ttc aaa atg gag cta tgg 785
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109      220      225      230
111 ccg ggc tat gag acg tgc att cgt cag cac gaa aaa gat att tta ttg 833
112 Pro Gly Tyr Glu Thr Ser Ile Arg Gln His Glu Lys Asp Ile Leu Leu
113 235      240      245      250
115 ggc acc gaa ata act cac aaa gtt atg cgc acc gag acg atc tac gac 881
116 Gly Thr Glu Ile Thr His Lys Val Met Arg Thr Glu Thr Ile Tyr Asp
117      255      260      265
119 ata atg cga cgt tgc tca cac aat ccg gct cgt cat cag gac gaa gta 929
120 Ile Met Arg Arg Cys Ser His Asn Pro Ala Arg His Gln Asp Glu Val
121      270      275      280
123 cgg gta aat gtt ttg gac ttg att gtc ctt acg gat tac aat aac aga 977
124 Arg Val Asn Val Leu Asp Leu Ile Val Leu Thr Asp Tyr Asn Asn Arg
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127 act tat cgt atc aat gat gtc gac ttt gga caa act ccg aaa tca aca 1025
128 Thr Tyr Arg Ile Asn Asp Val Asp Phe Gly Gln Thr Pro Lys Ser Thr
129      300      305      310
131 ttc agt tgc aag ggt aga gat atc agt ttc gtg gaa tac tat ctc act 1073
132 Phe Ser Cys Lys Gly Arg Asp Ile Ser Phe Val Glu Tyr Tyr Leu Thr

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133	315				320				325				330				
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136	Lys	Tyr	Asn	Ile	Arg	Ile	Arg	Asp	His	Asn	Gln	Pro	Leu	Leu	Ile	Ser	
137					335				340						345		
139	aaa	aat	agg	gac	aag	gct	cta	aaa	act	aac	gct	agc	gaa	tta	gtg	gta	1169
140	Lys	Asn	Arg	Asp	Lys	Ala	Leu	Lys	Thr	Asn	Ala	Ser	Glu	Leu	Val	Val	
141					350				355						360		
143	cta	att	cct	gag	ctc	tgc	cga	gtg	act	ggg	ctc	aat	gcc	gag	atg	cgc	1217
144	Leu	Ile	Pro	Glu	Leu	Cys	Arg	Val	Thr	Gly	Leu	Asn	Ala	Glu	Met	Arg	
145					365				370						375		
147	tca	aac	ttt	cag	ctt	atg	cgt	gcc	atg	agc	agt	tat	acg	cga	atg	aac	1265
148	Ser	Asn	Phe	Gln	Leu	Met	Arg	Ala	Met	Ser	Ser	Tyr	Thr	Arg	Met	Asn	
149					380				385						390		
151	ccc	aaa	caa	cgc	act	gat	cga	ttg	cgc	gct	ttt	aac	cac	cgt	tta	caa	1313
152	Pro	Lys	Gln	Arg	Thr	Asp	Arg	Leu	Arg	Ala	Phe	Asn	His	Arg	Leu	Gln	
153	395					400				405					410		
155	aac	act	cca	gaa	agt	gtg	aag	gtc	ttg	aga	gac	tgg	aac	atg	gaa	ctg	1361
156	Asn	Thr	Pro	Glu	Ser	Val	Lys	Val	Leu	Arg	Asp	Trp	Asn	Met	Glu	Leu	
157					415				420						425		
159	gac	aag	aac	gtc	aca	gaa	gta	caa	ggc	cgg	ata	att	gga	cag	cag	aac	1409
160	Asp	Lys	Asn	Val	Thr	Glu	Val	Gln	Gly	Arg	Ile	Ile	Gly	Gln	Gln	Asn	
161					430				435						440		
163	atc	gtg	ttt	cat	aat	gga	aag	gtt	cct	gct	gga	gaa	aac	gct	gat	tgg	1457
164	Ile	Val	Phe	His	Asn	Gly	Lys	Val	Pro	Ala	Gly	Glu	Asn	Ala	Asp	Trp	
165					445				450						455		
167	caa	agg	cac	ttc	aga	gac	caa	agg	atg	ctt	acc	act	ccg	agc	gat	ggc	1505
168	Gln	Arg	His	Phe	Arg	Asp	Gln	Arg	Met	Leu	Thr	Thr	Pro	Ser	Asp	Gly	
169					460				465						470		
171	ctc	gat	cgt	tgg	gct	gtc	atc	gcg	ccg	caa	agg	aat	tcc	cat	gaa	ctc	1553
172	Leu	Asp	Arg	Trp	Ala	Val	Ile	Ala	Pro	Gln	Arg	Asn	Ser	His	Glu	Leu	
173	475					480				485					490		
175	cga	act	cta	ctt	gac	tct	ttg	tat	aga	gca	gct	agt	gga	atg	ggt	ctt	1601
176	Arg	Thr	Leu	Leu	Asp	Ser	Leu	Tyr	Arg	Ala	Ala	Ser	Gly	Met	Gly	Leu	
177					495				500						505		
179	aga	att	cga	agc	ccc	cag	gaa	ttc	ata	att	tat	gat	gat	cgc	act	gga	1649
180	Arg	Ile	Arg	Ser	Pro	Gln	Glu	Phe	Ile	Ile	Tyr	Asp	Asp	Arg	Thr	Gly	
181					510				515						520		
183	act	tat	gtg	aga	gca	atg	gat	gat	tgt	gtg	cgc	tca	gat	ccc	aaa	ctt	1697
184	Thr	Tyr	Val	Arg	Ala	Met	Asp	Asp	Cys	Val	Arg	Ser	Asp	Pro	Lys	Leu	
185					525				530						535		
187	ata	tta	tgc	ctc	gta	ccc	aat	gat	aac	gcc	gaa	aga	tac	tca	tca	atc	1745
188	Ile	Leu	Cys	Leu	Val	Pro	Asn	Asp	Asn	Ala	Glu	Arg	Tyr	Ser	Ser	Ile	
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191	aaa	aag	aga	gga	tac	gtt	gac	agg	gcg	gtg	cca	act	caa	gtt	gtg	acc	1793
192	Lys	Lys	Arg	Gly	Tyr	Val	Asp	Arg	Ala	Val	Pro	Thr	Gln	Val	Val	Thr	
193	555					560				565					570		
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196	Leu	Lys	Thr	Thr	Lys	Asn	Arg	Ser	Leu	Met	Ser	Ile	Ala	Thr	Lys	Ile	
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199 gca atc caa ctg aat tgc aag ttg gga tat aca ccc tgg atg atc gaa 1889
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201 590 595 600
203 cta ccc ttg tcc gga ctg atg aca att ggc ttt gac att gcg aag agc 1937
204 Leu Pro Leu Ser Gly Leu Met Thr Ile Gly Phe Asp Ile Ala Lys Ser
205 605 610 615
207 aca cga gat cgg aag agg gcc tac gga gca ttg att gcc tca atg gat 1985
208 Thr Arg Asp Arg Lys Arg Ala Tyr Gly Ala Leu Ile Ala Ser Met Asp
209 620 625 630
211 cta cag caa aac tcc acg tac ttc agc aca gtc acg gag tgc agc gcc 2033
212 Leu Gln Gln Asn Ser Thr Tyr Phe Ser Thr Val Thr Glu Cys Ser Ala
213 635 640 645 650
215 ttt gat gtg ctc gct aac acc ctt tgg ccg atg ata gca aag gcc ctg 2081
216 Phe Asp Val Leu Ala Asn Thr Leu Trp Pro Met Ile Ala Lys Ala Leu
217 655 660 665
219 cgc caa tat caa cat gag cat agg aag ctg cca tct cga atc gta ttt 2129
220 Arg Gln Tyr Gln His Glu His Arg Lys Leu Pro Ser Arg Ile Val Phe
221 670 675 680
223 tat cga gac ggt gtg agc tcc ggc tct cta aag cag ctt ttt gaa ttt 2177
224 Tyr Arg Asp Gly Val Ser Ser Gly Ser Leu Lys Gln Leu Phe Glu Phe
225 685 690 695
227 gaa gtc aag gac atc att gag aag ttg aaa act gaa tac gcc cgc gtc 2225
228 Glu Val Lys Asp Ile Ile Glu Lys Leu Lys Thr Glu Tyr Ala Arg Val
229 700 705 710
231 cag cta agc cca ccg caa tta gct tat att gtg gta acc aga tcc atg 2273
232 Gln Leu Ser Pro Pro Gln Leu Ala Tyr Ile Val Val Thr Arg Ser Met
233 715 720 725 730
235 aac acg cgc ttc ttc ctc aac gga caa aat cct ccg cct ggt act ata 2321
236 Asn Thr Arg Phe Phe Leu Asn Gly Gln Asn Pro Pro Pro Gly Thr Ile
237 735 740 745
239 gtt gat gac gtt ata act ctg ccc gag aga tac gac ttt tat ctg gtc 2369
240 Val Asp Asp Val Ile Thr Leu Pro Glu Arg Tyr Asp Phe Tyr Leu Val
241 750 755 760
243 tcg caa caa gtt cgt cag ggt aca gtg tcg ccg acc agc tac aat gtt 2417
244 Ser Gln Gln Val Arg Gln Gly Thr Val Ser Pro Thr Ser Tyr Asn Val
245 765 770 775
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249 780 785 790
251 tac aag atg tgc cac ttg tac tac aat tgg tcg ggc acc aca cga gtg 2513
252 Tyr Lys Met Cys His Leu Tyr Tyr Asn Trp Ser Gly Thr Thr Arg Val
253 795 800 805 810
255 cca gca gtt tgc cag tac gct aag aag cta gct acc ctc gtg ggt acg 2561
256 Pro Ala Val Cys Gln Tyr Ala Lys Lys Leu Ala Thr Leu Val Gly Thr
257 815 820 825
259 aac ttg cac tct att ccg caa aac gcg ctc gaa aag aag ttt tat tat 2609
260 Asn Leu His Ser Ile Pro Gln Asn Ala Leu Glu Lys Lys Phe Tyr Tyr
261 830 835 840
263 cta taattggata taatttagaa tggagtatta atccttacta agaggccata 2662

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Input Set : A:\180-104-2.ST25 revised 07-30-01.txt

Output Set: N:\CRF3\10232001\I873737A.raw

264 Leu  
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 268 cagcatttat gactaaatat tttgtatttg aaatgcatta ctgctctttt ttcaaacaaa 2782  
 270 agcaaaattg aggattaaga ttctggtatt taagcataag accagaggaa attcccaaac 2842  
 272 aaacatttaa agttatctat caagacatgt tcattaattt ggaatataat tactttattt 2902  
 274 tttattgtat attttagttt atgtaaagaa aaattacata catccatggt tgcttactta 2962  
 276 accacacatt catggctgct tatattcgtg aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 3022  
 278 aaaaaaaaaa aaaaaaaaaa aaaaaa 3047

281 &lt;210&gt; SEQ ID NO: 2

282 &lt;211&gt; LENGTH: 843

283 &lt;212&gt; TYPE: PRT

284 &lt;213&gt; ORGANISM: Drosophila sp.

286 &lt;220&gt; FEATURE:

287 &lt;221&gt; NAME/KEY: misc\_feature

288 &lt;222&gt; LOCATION: (13)

289 &lt;223&gt; OTHER INFORMATION: Xaa=Leu or Ile

291 &lt;220&gt; FEATURE:

292 &lt;221&gt; NAME/KEY: misc\_feature

293 &lt;222&gt; LOCATION: (106)

294 &lt;223&gt; OTHER INFORMATION: Xaa=Leu or Ile

296 &lt;220&gt; FEATURE:

297 &lt;221&gt; NAME/KEY: misc\_feature

298 &lt;222&gt; LOCATION: (785)

299 &lt;223&gt; OTHER INFORMATION: Xaa=Leu or Ile

301 &lt;400&gt; SEQUENCE: 2

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 303 1 5 10 15  
 305 Asp Ser Ser Thr Ser Arg Gly Ser Gly Asp Gly Pro Arg Val Lys Val  
 306 20 25 30  
 308 Phe Arg Gly Ser Ser Ser Gly Asp Pro Arg Ala Asp Pro Arg Ile Glu  
 309 35 40 45  
 311 Ala Ser Arg Glu Arg Arg Ala Leu Glu Glu Ala Pro Arg Arg Glu Gly  
 312 50 55 60  
 314 Gly Pro Pro Glu Arg Lys Pro Trp Gly Asp Gln Tyr Asp Tyr Leu Asn  
 315 65 70 75 80  
 317 Thr Arg Pro Val Glu Leu Val Ser Lys Lys Gly Thr Asp Gly Val Pro  
 318 85 90 95  
 W--> 320 Val Met Leu Gln Thr Asn Phe Phe Arg Xaa Lys Thr Lys Pro Glu Trp  
 321 100 105 110  
 323 Arg Ile Val His Tyr His Val Glu Phe Val Pro Thr Ile Glu Asn Pro  
 324 115 120 125  
 326 Arg Val Arg Met Gly Val Leu Ser Asn His Ala Asn Leu Leu Gly Ser  
 327 130 135 140  
 329 Gly Tyr Leu Phe Asp Gly Leu Gln Leu Phe Thr Thr Arg Lys Phe Glu  
 330 145 150 155 160  
 332 Gln Glu Ile Thr Val Leu Ser Gly Lys Ser Lys Leu Asp Ile Glu Tyr  
 333 165 170 175  
 335 Lys Ile Ser Ile Lys Phe Val Gly Phe Ile Ser Cys Ala Glu Pro Arg  
 336 180 185 190

Use of n and / or Xaa has been detected in the  
 Sequence Listing. Review the Sequence Listing  
 to ensure a corresponding explanation is present  
 in the <220> to <223> fields of each sequence  
 using n or Xaa.

## VERIFICATION SUMMARY

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Input Set : A:\180-104-2.ST25 revised 07-30-01.txt

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L:29 M:283 W: Missing Blank Line separator, <220> field identifier  
L:55 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
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L:75 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:76 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:247 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:248 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:302 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2  
L:320 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2  
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L:702 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3  
L:800 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4  
L:824 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4  
L:854 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4  
L:935 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4  
L:952 M:283 W: Missing Blank Line separator, <220> field identifier  
L:996 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5  
L:997 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5  
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L:1161 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5  
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L:1296 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:1377 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6  
L:1409 M:283 W: Missing Blank Line separator, <220> field identifier  
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L:1565 M:283 W: Missing Blank Line separator, <220> field identifier  
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